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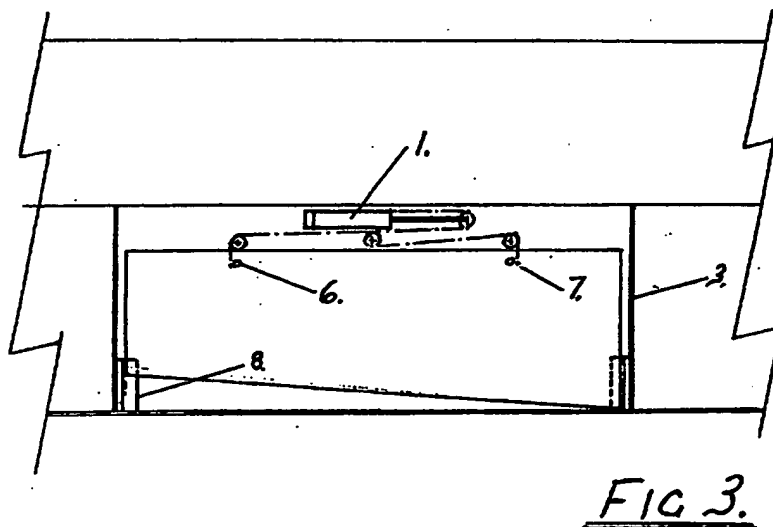
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GB 1272543 A US 4928613 A

(58) Field of Search
UK CL (Edition R) B7A AEC AED AHJ
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Online EPODOC JAPIO WPI

(54) Abstract Title
Vessel having retractable keels

(57) A vessel has at least two mechanically retractable keels (2, Fig 4), wherein the keels are lockable in an upper or a lower position. The retracting mechanism 1 may comprise a double chain and sprocket arrangement linked to a power unit. The keels may be located in guide channels 8 which support the full height of the keel and provide wedge interfaces for locking the keels in the upper and lower positions. The keels may be formed of metal and/or plastics material and along with the guide channels may be situated in a watertight housing 3 having removable side (5, Fig 1) and top (4, Fig 4) covers to allow maintenance of the mechanism and keel.



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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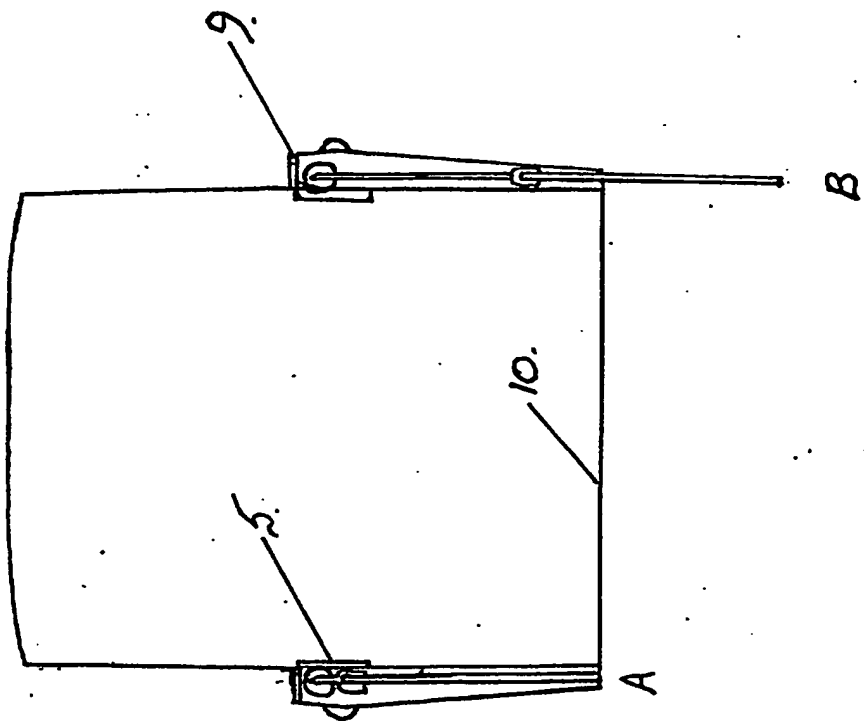


Fig 1.

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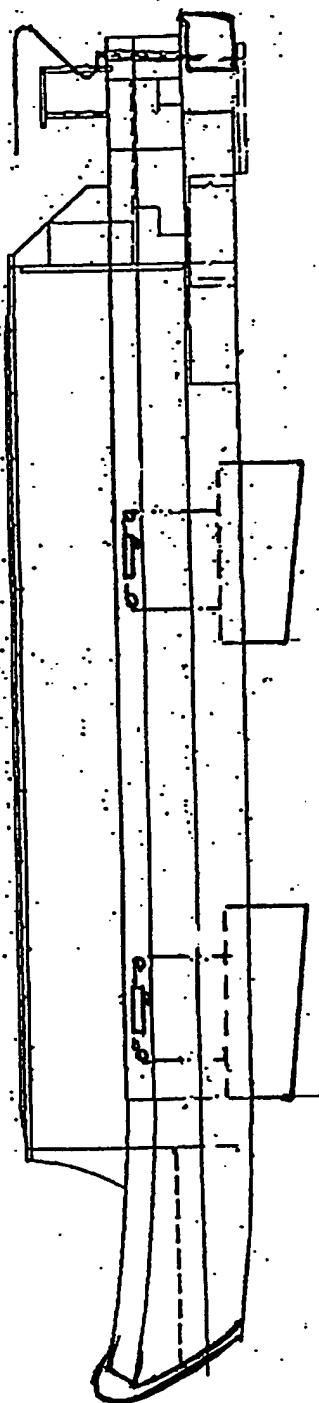


Fig 2.

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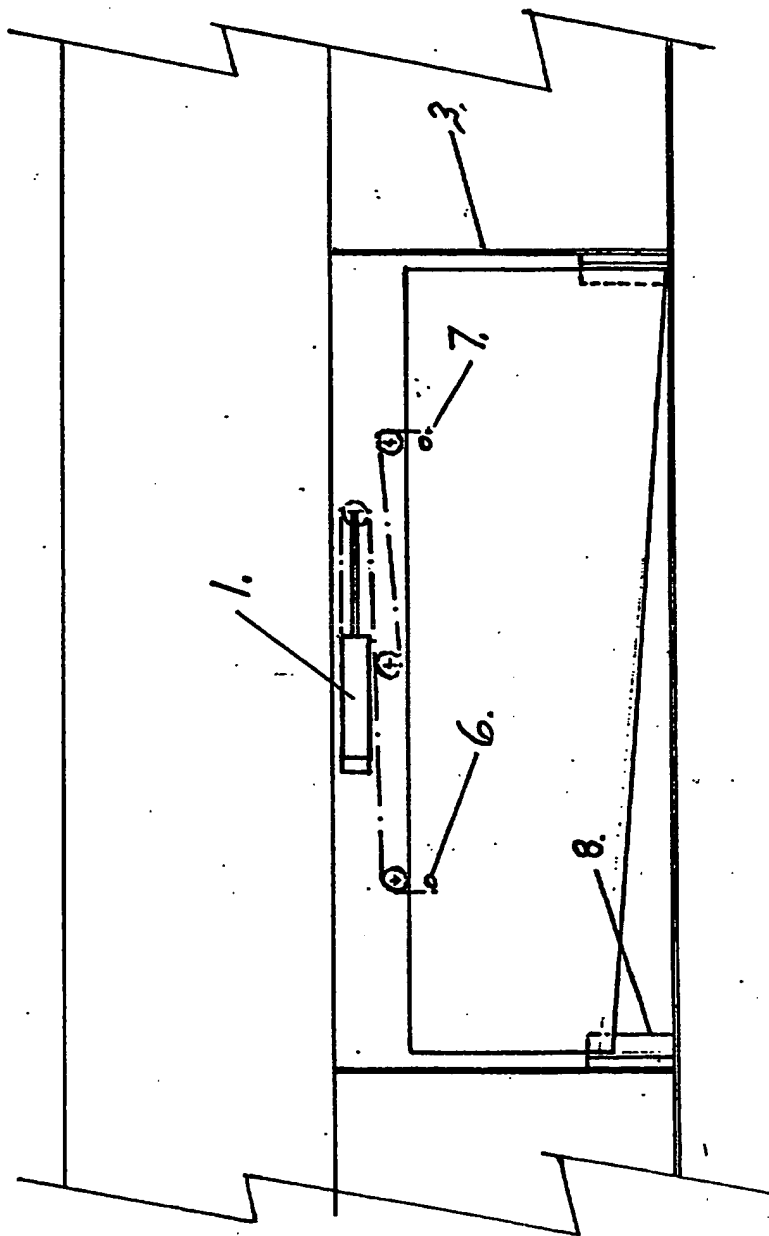


FIG. 3.

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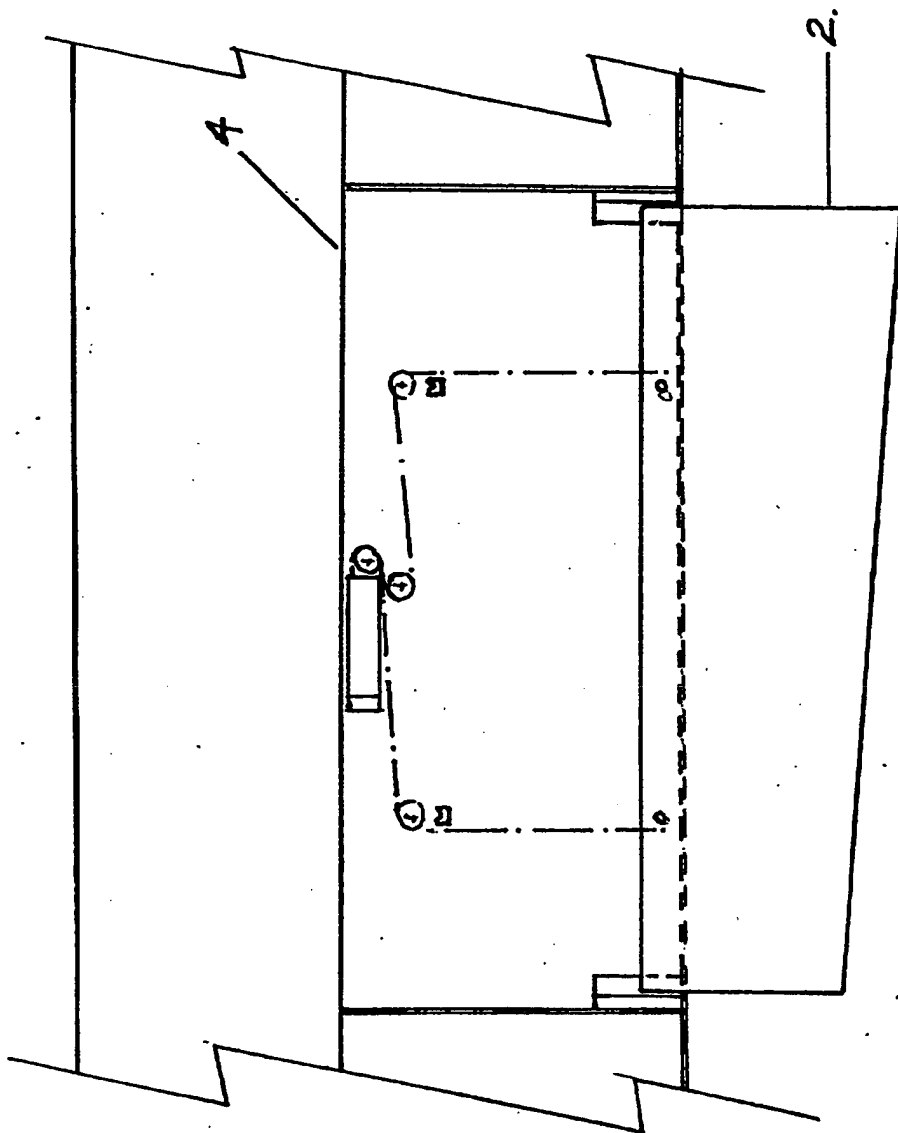


Fig 4.

COASTAL WATERS NARROWBOAT

This invention relates to the development of the Canal narrowboat for use on river estuaries and coastal waters.

Narrowboats designed for cruising the extensive British canal system have a maximum beam of 2.1 metres, are flat-bottomed and of shallow draught. Any waters that are open and tidal are considered unsuitable for the narrowboat to use as they are difficult to steer in conditions of a strong 'side-on' force caused by wind and current.

According to this invention there is provided internal retractable side keels which when lowered give a double keel feature to the hull enabling the boat to be steered effectively and safely in open waters. When the keels are fully raised for canal use they do not interfere with either the amount of room inside the boat or the flat bottom feature of the hull.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 shows a section through the narrowboat with the keel at (A) fully retracted and the keel at (B) fully lowered.

Figure 2 shows an elevation of the boat and the related positions of the keels and their respective lifting and lowering mechanisms.

Figure 3 shows a detailed elevation of the keel in its retracted position.

Figure A shows a detailed elevation of the keel in its lowered position.

Referring to the drawings the keels comprise of:

Item 1 Fig 3. The keel lifting and lowering mechanism consisting of an easily removed chain and sprocket arrangement connected to a power unit.

Item 2 Fig 4. The keel is manufactured from flattened plate steel, galvanised, having a tapered bottom edge so as to give a lead-in to any encountered obstruction while cruising. The keel is free to retract under an upward force as the keel is supported by chains.

Item 3 Fig 3. The keel enclosure is of watertight, all welded steel construction from the bottom plate Item 10 Fig 1. to the deck edge Item 9 Fig 1. and attached to the inside of the boat hull.

Item 4 Fig 4. The top inspection cover will fit flush with the deck edge giving smooth surface along the length of the boat and of sufficient dimensions to allow for the removal of the keel.

Item 5 Fig 1. Side inspection covers of watertight construction to enable power unit, chains and sprockets to be removed prior to lifting the keel from the boat for maintenance purposes.

Item 6 Fig 3. Keel locking rods are provided to lock the keel in the retracted position while cruising the canals and also to hold the keel in position while the lifting mechanism is being removed for maintenance purposes.

Item 7 Fig 3. Adjustment facility to enable accurate keel alignment into the guides.

Item 8 Fig 3. Guide channels or rollers to give smooth movement and secure location to the keel.

The keels are arranged in pairs on either side of the boat. There can be from one pair of keels up to four pairs of keels per boat depending upon the length of the boat.

CLAIMS

- 1. Each side keel built into the coastal waters narrowboat is suspended by a mechanism which raises and lowers the keel; the said mechanism being contained in the keel housing incorporating devices to lock the keel in the upper and lower position.**
- 2. A side keel as claimed in Claim 1 where the mechanism is a double chain and sprocket arrangement linked to a power unit.**
- 3. A side keel as claimed in Claim 1 or Claim 2 is located in guide channels which support the full height of the keel which house a wedge interface for fixing the keel in it's upper and lower position.**
- 4. A side keel as claimed in any preceding claim where the watertight housing has removable side and top covers in order to service the mechanism and keel.**
- 5. A side keel as claimed in any proceeding claim which is made from metal and plastics material, or from a combination of these materials.**
- 6. A side keel substantially as herein described and illustrated in the accompanying drawings.**



INVESTOR IN PEOPLE

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Claims searched: 1 to 6

Examiner: Richard Collins
Date of search: 24 October 2000

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): B7A AEC, AED, AHJ.

Int Cl (Ed.7): B63B 3/38, 3/44, 41/00.

Other: Online EPODOC, JAPIO, WPI.

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 1272543 A (CHAUVEAU) see figure 1 and related description.	1,5
X	US 4928613 A (RUDOLF) see figure 3 and related description.	1,5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.